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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,545	02/27/2006	Shojiro Komatsu	TCP-005	7653
33628	7590	12/01/2008		
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1700 DIAGONAL RD				
SUITE 310				
ALEXANDRIA, VA 22314-2848				
EXAMINER				
WIECZOREK, MICHAEL P				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
12/01/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/569,545

**Applicant(s)**

KOMATSU ET AL.

**Examiner**

Michael Wieczorek

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 October 2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.  
4a) Of the above claim(s) 1-5 and 11 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 6-10 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-893)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date 2/27/2006

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group II, claims 6 through 10, in the reply filed on October 2, 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1 through 5 and 11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on October 2, 2008.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 6-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. The term "excellent in field electron emission" in claims 6 through 10 is a relative term which renders the claim indefinite. The term "excellent in field electron emission" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification of the present case defines does "excellent in field electron emission" as having a density of resulting current being 1000 times or more as high as that of a

corresponding conventional film (Page 1 Paragraph 2) but this does not adequately define what the term means since the specification does not disclose what properties “conventional films” have not does the specification clearly define what properties the formed film has either..

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 6-10 are rejected under 35 U.S.C. 102(b) as being taught by Komatsu et al (U.S. Patent # 5,286,533).

Komatsu et al teaches a method of forming a membrane body of  $Sp^3$ -bonded boron nitride in the form of hard boron nitride by a plasma CVD method employing beam irradiation. The steps of the taught method comprise: introducing a source gas comprising a boron source and a nitrogen source whose pressure is adjusted to be 0.01 to 100 torr into a reaction system; adjusting the temperature of the substrate in the reaction chamber to be at 300 °C to 1100 °C; radiating an ultraviolet beam onto a substrate with the concomitant existence of plasma; and forming via vapor-phase reaction (i.e. chemical vapor deposition) a film on the substrate (Abstract, Column 2 Lines 33-48, Column 3 Lines 28-45 and Figure 1).

Komatsu et al does not specifically teach that the boron nitride film is formed in a self-organized manner but the specification of the present case discloses that the irradiation of the forming boron nitride film during deposition with an UV beam causes the film to form in a self-

organized manner (Page 3, third paragraph of the specification of the present case). Since Komatsu et al teaches irradiating the boron nitride film as it form on the substrate with ultraviolet rays (Column 2 Lines 62-68), thus Komatsu et al teaches that the film is formed in a self-organized manner.

As for the limitation that the formed membrane or film has a surface texture allowing excellent field election emission, since Komatsu et al teaches all of the steps of forming the film as disclosed by claim 6 of the present case, the film formed by the method of Komatsu et al would inherently have a surface texture allowing excellent field election emission.

As for claim 7, Komatsu et al teaches that the source gas of boron and nitrogen is diluted with a working gas comprising argon helium, hydrogen or a mixture of the two to a volumetric percent of 0.01 to 10% or at a volume ratio of 0.01 - 10 to 100 (Column 1 Lines 64-68, Column 2 Lines 1-2 and Column 3 Lines 28-35), which is within the range disclosed by the claim of the present case.

As for claim 8, Komatsu et al teaches that the boron source is diborane or  $B_2H_6$  and that the nitrogen source is ammonia or  $NH_3$  (Column 2 Lines 24-32).

As for claim 9, Komatsu et al teaches that the ultraviolet irradiation occurs as a pulsed laser (Column 3 Lines 1-12).

As for claim 10, since Komatsu et al teaches all of the steps for forming a boron nitride film as disclosed in claim 6, the boron nitride film formed by the method taught by Komatsu et al would inherently comprise a polytype boron nitride such as a 5H type or a 6H type boron nitride.

***Conclusion***

Claims 6 through 10 are rejected. Claims 1 through 5 and 11 have been withdrawn from consideration as being nonelected inventions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Wieczorek whose telephone number is (571)270-5341. The examiner can normally be reached on Monday through Friday; 7:30 AM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MPW/

/Michael Wieczorek/  
Examiner, Art Unit 1792

/Michael Cleveland/

Supervisory Patent Examiner, Art Unit 1792

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